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Performance Oriented Packaging Testing of Mk 117 Mod 0 JATO Shipping Container for Packing Group II Solid Hazardous Materials

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6. AUTHOR(S)

J. Mike Dwyer

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Naval Weapons Station Earle
Test and Evaluation Branch (Code 5023)
Colts Neck, NJ 07722-5000

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13. ABSTRACT (Maximum 200 words)

This Performance Oriented Packaging (POP) test was conducted to ascertain whether the Mk 117 Mod 0 JATO Shipping Container meets the Packing Group II requirements specified by the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 31 December 1991. The packaged commodity used for the test was two inert rocket motors weighing 23 kg (50 pounds) each. This represents the current maximum commodity weight. Gross weight of the loaded container was 59 kg (130 pounds). The test results indicate that the container has conformed to the POP requirements.

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PERFORMANCE ORIENTED PACKAGING TESTING OF MK 117 MOD 0 JATO SHIPPING CONTAINER FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS

Author:
J. Mike Dwyer
Mechanical Engineering Technician

Performing Activity:
Naval Weapons Station Earle
Colts Neck, New Jersey 07722-5000

October 1992

FINAL

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Sponsoring Organization:
Naval Surface Warfare Center
Indian Head Division (Code 5710R)
Indian Head, MD 20640-5035

INTRODUCTION

This Performance Oriented Packaging (POP) test was performed to ascertain whether the Mk 117 Mod 0 JATO Container meets the Packing Group II requirements specified by the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 31 December 1991. The packaged commodity used for the test was two inert rocket motors weighing 23 kg (50 pounds) each. This represents the current maximum commodity weight. Gross weight of the loaded container was 59 kg (130 pounds).

Due to unavailability only two container were used for testing. This is less than the number required by the regulations. Approval for this deviation has been granted by the Under Secretary of Defense, Memorandum for the Joint Logistics Commanders dated 22 February 1990.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. The container was placed on a repetitive shock platform which has a vertical linear motion of 1-inch double amplitude. Movement of the container was restricted during vibration in all but the vertical direction. The frequency of the platform was increased until the container left the platform 1/16 of an inch at some instant during each cycle. Test time was 1 hour.

2. Stacking Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. The container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a minimum height of 3 meters (including the test container). A weight of 762 kg (1,680 pounds) was stacked on the test container. The test was performed for 24 hours. The weight was then removed and the container examined.

3. Drop Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. Five drops were performed from a height of 1.2 meters (4 feet), impacting the following surfaces:

a. Flat bottom using container #1.

b. Flat top using container #1.

c. Flat on long side using container #1.

d. Flat on short side using container #1.

e. One on the aft stbd corner using container #2.

PASS/FAIL

1. Base Level Vibration Test

The criteria for passing the base level vibration test is outlined in Title 49 CFR, Sec. 178.608(c): No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

2. Stacking Test

The criteria for passing the stacking test is outlined in Title 49 CFR, Sec. 178.606(d): No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

3. Drop Test

The criteria for passing the drop test is outlined in Title 49 CFR, Sec. 178.603(f): A package is considered to successfully pass the drop tests if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Satisfactory.

DISCUSSION

1. Base Level Vibration Test

The input vibration frequency was 3.6 Hz. Immediately after the vibration test was completed, the container was removed from the platform, turned on its side and inspected. No unfavorable distortion or deterioration was observed.

2. Stacking Test

The container was inspected after the 24-hour period was over. No unfavorable distortion or deterioration was observed.

3. Drop Test

After each drop, the container was inspected. The contents were completely retained by the container.

REFERENCE MATERIAL

A. Code of Federal Regulations, Title 49 CFR, Parts 107-178.

B. Bureau of Explosives Tariff No. BOE 6000K Hazardous Materials Regulations of the Department of Transportation by Air, Rail, Highway, Water including Specifications for Shipping Containers.

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Crane, IN 47522-5000

TEST DATA SHEET

POP MARKING: UN 4C1/Y59/S/**/USA/DOD/NAD **YEAR LAST PACKED OR MANUFACTURED	
Container: Mk 117 Mod 0 JATO Shipping Container	
Type: 4C1	**Container P/N or NSN:** P/N 1638AS122
Drawing Number: 1638AS122	**Outer Packaging Material:** Wood
Dimensions: 34-1/8" L x 16-1/8" W x 9-13/16" H	**Gross Weight:** 59 kg (130 pounds)
Closure (Method/Type): two 5/8" straps and six 7-D nails	**Tare Weight:** 14 kg (30 pounds)
Additional Description:	

PACKAGED COMMODITY:		
Name: See table 1	**NSN(s):** See table 1	
United Nations Number: See table 1		
United Nations Packing Group: II		
Physical State (Solid, Liquid, or Gas): Solid		
Vapor Pressure (Liquids Only): N/A	**At 50 °C:** N/A	**At 55 °C:** N/A
Consistency/Viscosity: N/A	**Density/Specific Gravity:** N/A	
Amount Per Container: See table 1	**Flash Point:** N/A	
Net Weight: See table 1		

PACKAGED COMMODITY USED FOR TEST:	
Name: Two Inert Rocket Motors	**Physical State:** Solid
Consistency: N/A	**Density/Specific Gravity:** N/A
Test Pressure (Liquids Only): N/A	**Net Weight:** 45 kg (100 pounds)
Additional Description:	

N/A = Not Applicable

TABLE 1
Commodities Approved for Shipping in the Mk 117 Mod 0 JATO Shipping Container

NALC/ DODIC	NSN	Commodity Nomenclature	Packing Drawing Number	Haz Class/Div	UN Number	Units/ Cntr	Total Net Weight (lb)	Total Gross Weight (lb)
H341	1340-01-177-2502	Mk 117 Mod 0 JATO Rocket Motor	1638AS123	1.3C	0186	2	100	130